WHAT IS CLAIMED IS:

1. An electrostatic discharge (ESD) protection device, comprising:

a semiconductor layer;

a first diffusion region formed in the layer;

a second diffusion region formed in the layer adjacent to and spaced from the first diffusion region; and

at least one island formed along a length direction of the first diffusion region, the at least one island positioned non-symmetrically along the length direction.

2. The ESD protection device of claim 1, wherein the at least one island comprises at least one polysilicon island.

3. The ESD protection device of claim 1, wherein the at least one island comprises at least one field oxide island.

4. The ESD protection device of claim 1, wherein the at least one island comprises at least one shallow trench island.

5. The ESD protection device of claim 1, wherein the at least one island comprises at least one island constructed of insulation material.

6. The ESD protection device of claim 1, wherein the ESD protection device is a MOSFET, the first diffusion region is a drain region, and the second diffusion region is a source region;

the device further comprising a gate region overlying a region between the source and drain regions.

7. The ESD protection device of claim 6, wherein the semiconductor layer comprises a layer of silicon formed on an insulating layer to form a silicon-on-insulator (SOI) substrate, so that the MOSFET is formed on the SOI substrate.

8. The ESD protection device of claim 1, wherein the ESD protection device is a bipolar structure, the first diffusion region is a collector region, and the second diffusion region is an emitter region.

9. The ESD protection device of claim 1, wherein the semiconductor layer comprises a silicon substrate.

10. The ESD protection device of claim 1, wherein the semiconductor layer comprises a layer of silicon formed on an insulating layer to form a silicon-on-insulator substrate.

11. The ESD protection device of claim 1, wherein the at least one island comprises a first island and a second island, the first island being substantially longer

than the second island and a gap between proximate ends of the first and second islands being near an edge of the first diffusion region.

12. The ESD protection device of claim 11, further including a third island and a fourth island formed along a length direction of the second diffusion region, the third island being substantially longer than the fourth island, the third island being non-symmetrically positioned relative to the first island.

13. The ESD protection device of claim 1, wherein the at least one island comprises a first island and a second island, the first island being substantially longer than the second island and a gap between proximate ends of the first and second islands being near an edge of the first diffusion region, near a first side of the device, along the length direction of the diffusion region; and

further including at least another island formed substantially parallel to the length direction of the first diffusion region along a length direction of the second diffusion region.

14. The ESD protection device of claim 13, wherein the at least another island comprises a third island and a fourth island, the fourth island being substantially longer than the third island, a gap between proximate ends of the third and fourth islands being near an edge of the second diffusion region along the length direction near a second side of the device opposite the first side.

15. The ESD protection device of claim 14, wherein remote ends of the first and third islands are joined by a first connection, remote ends of the second and fourth islands are joined by a second connection, and the first and second connections are connected together.

16. The ESD protection device of claim 12, further including a metal bus overlying at least a portion of the first and second diffusion regions including the first, second, third, and fourth islands; and

the first, second, third, and fourth islands comprising polysilicon.

17. The ESD protection device of claim 1, wherein the at least one island comprises a single island having one end extending beyond one edge of the first diffusion region and an opposite end proximate an opposite edge of the first diffusion region.

18. The ESD protection device of claim 11, wherein remote ends of the first and second islands extend beyond respective opposite edges of the first diffusion region.

19. The ESD protection device of claim 1, further including at least one island non-symmetrically disposed along a length direction of the second diffusion region.

20. An electrostatic discharge (ESD) protection device, comprising:

a semiconductor layer;

a first diffusion region formed in the layer;

a second diffusion region formed in the layer and spaced from the first diffusion region; and

only one island formed along a length direction of the first diffusion region.

21. The ESD protection device of claim 20, wherein opposite ends of the only one island are both within the first diffusion region.

22. The ESD protection device of claim 20, wherein opposite ends of the only one island both extend beyond edges of the first diffusion region.

23. An electrostatic discharge (ESD) protection device, comprising:

a semiconductor layer;

a first diffusion region formed in the layer;

a second diffusion region formed in the layer and spaced from the first diffusion region;

an island formed in and generally extending across a length direction of the first diffusion region, the island comprising a plurality of island portions, proximate ends of adjacent island portions forming a predetermined angle.

24. The ESD protection device of claim 23, wherein the predetermined angle is an obtuse angle.

25. The ESD protection device of claim 23, wherein the predetermined angle is approximately 90°.

26. The ESD protection device of claim 23, wherein opposite ends of the island extend beyond respective opposite edges of the first diffusion region.

27. An electrostatic discharge (ESD) protection device, comprising:

a semiconductor layer;

a first diffusion region formed in the layer;

a second diffusion region formed in the layer and spaced from the first diffusion region;

an island generally extending across a length direction of the first diffusion region, the island comprising a plurality of island portions that alternate between first portions substantially parallel to the length direction and second portions skewed relative to the length direction and connecting with proximate preceding and successive first portions at a predetermined angle.

28. The ESD protection device of claim 27, wherein the predetermined angle is an obtuse angle.

29. The ESD protection device of claim 27, wherein the predetermined angle is approximately 90°.

30. The ESD protection device of claim 27, wherein opposite ends of the island extend beyond respective opposite edges of the first diffusion region.

31. An electrostatic discharge (ESD) protection device, comprising:

a semiconductor layer;

a first heavily doped region in the layer;

a second heavily doped region in the layer;

a channel region formed between the first and second heavily doped regions;

at least one island formed along a length direction of the first heavily doped region; and

the at least one island having a length greater than 50% of a longitudinal dimension of the channel region so that the at least one island increases a lateral resistance of the first heavily doped region for improving ESD immunity.

32. The ESD protection device of claim 31, wherein the at least one island comprises at least one polysilicon island formed on an oxide.

33. The ESD protection device of claim 31, wherein the at least one island comprises a field oxide island.

34. The ESD protection device of claim 31, wherein the at least one island comprises a shallow trench island.

35. The ESD protection device of claim 31, wherein the at least one island comprises an island constructed of insulation material.

36. The ESD protection device of claim 31, wherein the ESD protection device comprises a MOSFET structure, the first heavily doped region being the drain region and the second heavily doped region being the source region.

37. The ESD protection device of claim 31, wherein the semiconductor layer comprises a layer of silicon formed on an insulating layer to form a silicon-on-insulator substrate.

38. The ESD protection device of claim 31, wherein the semiconductor layer comprises a silicon substrate.

39. The ESD protection device of claim 36, wherein the ESD protection device is a bipolar structure, the first heavily doped region being a collector region and the second heavily doped region being an emitter region.

40. The ESD protection device of claim 39, wherein the at least one island comprises islands distributed symmetrically along the length direction of the collector region.

41. The ESD protection device of claim 31, wherein the at least one island comprises islands distributed non-symmetrically along a longitudinal direction of the channel region.

42. The ESD protection device of claim 31, wherein the at least one island comprises islands distributed symmetrically along the length direction of the first heavily doped region.

43. The ESD protection device of claim 31, wherein the at least one island comprises portions forming a zigzag configuration.

44. The ESD protection device of claim 31, wherein the at least one island comprises two island portions forming a predetermined angle therebetween.

45. The ESD protection device of claim 31, wherein the at least one island comprises two island portions forming a right-angle therebetween.

46. The ESD protection device of claim 31, wherein the at least one island comprises two portions substantially perpendicular to each other.

47. The ESD protection device of claim 31, wherein the at least one island comprises two portions at a predetermined angle to each other.

48. The ESD protection device of claim 31, wherein the at least one island comprises two portions at an angle to each other wherein the angle is substantially in a range of 90° to 150°.

49. The ESD protection device of claim 31, wherein the at least one island is disposed between two opposite sides of the first heavily doped region.

50. The ESD protection device of claim 31, wherein the at least one island extends beyond the first heavily doped region at a first side of the first heavily doped region.

51. The ESD protection device of claim 31, wherein the at least one island extends beyond the first heavily doped region at first and second sides of the heavily doped region.

52. The ESD protection device of claim 31, wherein the at least one island extends beyond the first heavily doped region at first and second sides of the first heavily doped region and separates the first heavily doped region into two regions.

53. The ESD protection device of claim 31, further including a second island in the second heavily doped region.

54. An ESD protection device coupled between an anode and a cathode comprising:

a semiconductor layer;

a first heavily doped region in the layer;

a second heavily doped region in the layer;

a channel region formed between the first and second heavily doped regions; and

at least one polysilicon island formed along a length direction of the first heavily doped region, said at least one island being coupled to a node.

55. The ESD protection device of claim 54, wherein the at least one island overlaps with a field isolation region adjacent to the first heavily doped region.

56. The ESD protection device of claim 54, further including a capacitor;

wherein the node is an anode, the at least one island being coupled to the anode by the capacitor.

57. The ESD protection device of claim 54, further including a resistor;

wherein the node is a cathode, the at least one island coupled to the cathode by a resistor.

58. The ESD protection device of claim 54, wherein the node is an anode, the device further including a cathode;

wherein the at least one island is coupled to the anode and the cathode.

59. The ESD protection device of claim 54, further comprising

a polysilicon gate overlying the channel region;

wherein the at least one island is connected to the polysilicon gate.

60. An electrostatic discharge (ESD) protection device, comprising:

a semiconductor layer;

a first diffusion region formed in the layer;

a second diffusion region formed in the layer;

a channel region in the layer between the first and second diffusion regions;

a gate formed over the channel region;

a first island formed in the first diffusion region in contact with the gate and at a first predetermined angle thereto; and

a second island formed in the first diffusion region in contact with the first island.

61. The ESD protection device of claim 60, wherein the second island does not directly contact the gate.

62. The ESD protection device of claim 60, wherein the first diffusion region is a drain region and the second diffusion region is a source region.

63. The ESD protection device of claim 60, wherein the predetermined angle is approximately 90°.

64. The ESD protection device of claim 60, wherein the second island is substantially perpendicular to the first island.

65. The ESD protection device of claim 60, wherein the first and second islands are formed of polysilicon.

66. The ESD protection device of claim 60, wherein one of the first and second islands is formed of polysilicon and the other of the first and second islands is formed of field oxide.

67. The ESD protection device of claim 60, wherein the first and second islands are formed of field oxide.

68. The ESD protection device of claim 63, further including a third island formed in the drain region in contact with the gate at an approximately 90° angle to the gate and adjacent the first island; and

a fourth island formed in the drain region in contact with the third island and approximately perpendicular thereto;

wherein the first island is longer than the third island.

69. An electrostatic discharge (ESD) protection device, comprising:

a semiconductor layer;

a first heavily doped region formed in the layer;

a second heavily doped region formed in the layer and spaced apart from the first heavily doped region, said first and second heavily doped regions being formed by implanted ions;

an island formed in the first heavily doped region, the island comprising a plurality of island portions for blocking said implanted ions; and

a metal bus at least partially overlapping said island.

70. The ESD protection device of claim 69, wherein said island is completely overlapped by said metal bus.

71. The ESD protection device of claim 69, wherein said metal bus is a VSS bus.

72. The ESD protection device of claim 69, wherein said metal bus is a VDD bus.

73. The ESD protection device of claim 69, wherein said island is a polysilicon island over a thin oxide.

74. The ESD protection device of claim 69, wherein said island is a field oxide island.

75. The ESD protection device of claim 69, wherein said island is a shallow-trench isolation island.

76. An electrostatic discharge (ESD) protection device, comprising:

a semiconductor layer;

a first diffusion region formed in the layer;

a second diffusion region formed in the layer and spaced from the first diffusion region;

an island formed along a length direction of the first diffusion region, the island comprising a group of small islands.

77. The ESD protection device of claim 76, wherein the group of small islands is arranged in a substantially straight line.

78. The ESD protection device of claim 76, wherein each of the small islands is one of square, rectangular, cross-shaped, and T-shaped.

79. The ESD protection device of claim 76, wherein each of the small islands is formed of one of polysilicon and field oxide.

80. An electrostatic discharge (ESD) protection device, comprising:

a semiconductor layer;

a first diffusion region formed in the layer;

a second diffusion region formed in the layer;

a channel region in the layer between the first and second diffusion regions;

a gate formed over the channel region;

a plurality of islands in the first diffusion region in contact with the gate, each of the islands having a dendritic structure.

81. The ESD protection device of claim 80, wherein the plurality of islands comprises first and second islands arranged alternately along the gate.

82. The ESD protection device of claim 81, wherein the first islands have a common first dendritic structure and the second islands have a common second dendritic structure different from the first dendritic structure.

83. A method of making an electrostatic discharge (ESD) protection device, comprising the steps of:

providing a semiconductor layer;

forming a first diffusion region in the layer;

forming a second diffusion region in the layer adjacent to and spaced from the first diffusion region; and

forming at least one island along a length direction of the first diffusion region, to be one of symmetrically and non-symmetrically positioned along the length direction.

84. The method of claim 83, wherein the island forming step includes forming the at least one island of polysilicon.

85. The method of claim 83, wherein the island forming step includes forming the at least one island of field oxide.

86. The method of claim 83, wherein the island forming step includes forming the at least one island as a shallow trench.

87. The method of claim 83, wherein the island forming step includes forming the at least one island of insulation material.

88. The method of claim 83, wherein the island forming step includes forming the at least one island as a first island and a second island, the first island being substantially longer than the second island and a gap between proximate ends of the first and second islands being near an edge of the first diffusion region.

89. The method of claim 88, wherein the island forming step further includes forming a third island and a fourth island formed along a length direction of the second

diffusion region, the third island being substantially longer than the fourth island, the third island being non-symmetrically positioned relative to the first island.

90. The method of claim 83, wherein the island forming step includes forming the at least one island as a first island and a second island, the first island being substantially longer than the second island and a gap between proximate ends of the first and second islands being near an edge of the first diffusion region, near a first side of the device, along the length direction of the diffusion region; and

forming at least another island substantially parallel to the length direction of the first diffusion region along a length direction of the second diffusion region.

91. The method of claim 90, wherein the island forming step further includes forming the at least another island as a third island and a fourth island, the fourth island being substantially longer than the third island, a gap between proximate ends of the third and fourth islands being near an edge of the second diffusion region along the length direction near a second side of the device opposite the first side.

92. The method of claim 91, wherein the island forming step further includes joining remote ends of the first and third islands by a first connection, joining remote ends of the second and fourth islands by a second connection, and connecting the first and second connections together.

93. The method of claim 89, further including a step of forming a metal bus to overly at least a portion of the first and second diffusion regions including the first, second, third, and fourth islands; and

wherein the island forming step includes forming the first, second, third, and fourth islands of polysilicon.

94. The method of claim 83, wherein the island forming step includes forming the at least one island as a single island having one end extending beyond one edge of the first diffusion region and an opposite end proximate an opposite edge of the first diffusion region.

95. The method of claim 88, wherein the island forming step includes forming the first and second islands so that remote ends extend beyond respective opposite edges of the first diffusion region.

96. The method of claim 83, further including the step of forming at least one island non-symmetrically disposed in and along a length direction of the second diffusion region.

97. An electrostatic discharge (ESD) protection device, comprising:

a semiconductor layer;

a first diffusion region formed in the semiconductor layer;

a second diffusion region formed in the layer adjacent to and spaced from the first diffusion region; and

an island formed along a length direction of the first diffusion region, the island comprising first and second island portions of different lengths and spaced apart.

98. An electrostatic discharge protection device, comprising:

a semiconductor layer;

a first diffusion region formed in the semiconductor layer;

a second diffusion region formed in the layer adjacent to and spaced from the first diffusion region; and

a plurality of islands unevenly distributed along a length direction of the first diffusion region.

99. An electrostatic discharge (ESD) protection device, comprising:

a semiconductor layer;

a first diffusion region formed in the semiconductor layer;

a second diffusion region formed in the layer adjacent to and spaced from the first diffusion region; and

at least one island formed along a length direction of the first diffusion region and positioned non-symmetrically along the length direction, the at least one island being formed of a field oxide portion and a layer of polysilicon formed thereover.

100. The ESD protection device of claim 99, wherein a periphery of the polysilicon layer extends beyond an edge of the field oxide portion.

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